B.) AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings of claims in the Application.

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (New) A process for localized repair of a turbine component having a surface with a damaged thermal barrier coating system comprising the steps of:

cleaning a spalled region of the surface of the component with damage;

texturing the surface with damage to produce a textured surface having an array of spaced grooves of predetermined groove spacing, groove geometry, and wall angle

with the exposed surface by impinging a high energy beam on the exposed surface to produce the array, the grooves being of substantially constant depth; and

depositing a replacement thermal barrier coating over substantially only the textured surface.

29. (New) The process of claim 28 wherein the step of texturing the exposed surface with a high energy beam includes impinging an electron beam on the exposed surface.

30. (New) The process of claim 28 wherein the step of texturing the surface with damage with a high energy beam includes impinging a laser beam on the exposed surface.

31. (New) The process of claim 30 wherein the step of texturing the exposed surface with damage by impinging a laser beam further includes impinging a laser selected from the group consisting of YAG lasers, excimer lasers, diode lasers and YAG-harmonic wavelength lasers.

32. (New) The process of claim 31 wherein the step of texturing the surface by impinging a laser beam further includes impinging a laser beam having a power level of up to 1 KW.

33. (New) The process of claim 32 wherein the step of texturing surface by impinging a laser beam from an excimer laser further includes impinging the beam at a power level of between about 25 to 40 watts and at a beam traverse speed of about 2 inches per minute to about 15 inches per minute.

34. (New) The process of claim 28 further including the step of blending the deposited thermal barrier coating with adjacent undamaged thermal barrier material to obtain a smooth transition.

35. (New) The process of claim 28 wherein the step of cleaning further includes selecting a cleaning method from the group consisting of grit blasting, vapor degreasing, alkaline cleaning and vapor honing.

36. (New) The process of claim 28 wherein the groove spacing is from about 1 mil to about 8 mil.

37. (New) The process of claim 28 wherein the groove geometry includes unidirectional grooves.

38. (New) The process of claim 28 wherein the groove geometry includes at least two sets of grooves, the grooves within each set being substantially parallel with one another, and the grooves of each set intersecting the grooves of another set of grooves an angle in the range of about 15° to about 90°.

39. (New) The process of claim 28 wherein the groove geometry includes a groove depth that does not exceed the thickness of the deposited ceramic material.

40. (New) The process of claim 28 wherein an incidence angle of the high energy beam with the surface is between about 0° and 75° relative to a plane normal to the surface to produce grooves having predetermined wall angles of between about 15° and 90° with the surface.

41. (New) The process of claim 28 wherein the step of cleaning the surface with damage of the component includes cleaning an exposed surface substrate.

42. (New) The process of claim 41 wherein the step of texturing the surface with damage of the component includes texturing the exposed surface substrate.

43. (New) The process of claim 41 wherein the step of depositing a replacement thermal barrier coating over substantially only the textured substrate further includes first depositing a bond coat over the textured substrate without concealing the texturing, the followed by depositing a ceramic layer over the bond coat.

44. (New) The process of claim 41 further including the additional step of depositing a bond coat over the surface substrate.

45. (New) The process of claim 44 wherein the step of texturing includes texturing the deposited bond coat.

46. (New) The process of claim 45 wherein the step of depositing a replacement thermal barrier coating over substantially only the textured bond coat.

47. (New) The process of claim 28 wherein the step of cleaning the component surface with damage includes cleaning an exposed bond coat layer.

48. (New) A process for localized repair of a turbine component having a surface with localized damage to thermal barrier coating system in which the ceramic top coat has spalled, exposing an underlying bond coat, comprising the steps of:

cleaning the exposed bond coat;

machining the exposed bond coat using a high energy beam to produce a substantially linear array of substantially equally spaced grooves intersecting at an angle of between about 15° to about 90° and spaced about 1 mil to about 5 mil, the grooves being of substantially constant depth no deeper than the thickness of the bond coat and formed by a high energy beam incident at an angle of about 0° to about 75° normal to the surface of the bond coat; and

depositing the ceramic material on the machined bond coat.